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A distinct understanding through different lenses

Abstract

Today, citizens, professionals, civil servants, social enterprises, and others form different types of coalitions to overcome the challenges facing our modern cities. In this paper, the particularities of these types of groups are characterised and categorised into ten different types of city makers. Generally, these types of city makers bring value to cities, but we conclude that this value could be enriched through more participatory approaches that stimulate crossovers and accelerate the transition towards sustainable futures. Therefore, we characterise the different identified types as potential 'participatory' city makers. However, these participatory approaches and the networks between them still need to be developed, while improving conditions and dynamics that can enable and enhance innovation in urban environments. Design and systems thinking could contribute valuable methods and perspectives to the development of these participatory and systemic approaches. Finally, the categorisation presented in this paper must enable a better understanding of the transformative capacity of these different types of city makers, necessary for flourishing and sustainable communities.

***Keywords*:** Urban planning, participatory design, sustainability transitions, Rotterdam.

Introduction

At present, different types of coalitions represent innovative ways of urban insurgent activism that aim at transformation, calling for new answers to citizens' needs (Linders and Mayer, 2002). Typically, social entrepreneurs, civic volunteers, local activists or civil servants represent these new city makers. The new city makers are active on various topics and challenge the existing social and cultural structures through which urban services, spaces and buildings are managed. They respond to rising urban issues with new approaches, focusing on better quality of life and sustainability. In this sense, the city makers that take responsibility and lead new practices can be seen as front-runners of urban sustainability transitions (Frantzeskaki et al. 2016). However, the fact that some front-runners collaborate in different and innovative ways does not necessarily produce a broader collaboration or change of practices among all actors. Scholars in different domains have tried to describe the nature and potential of practices of frontrunners, focusing on different aspects that characterise them: for example, as place making in urban development (Palermo & Ponzini, 2014), as transformative social innovation (Avelino et al., 2017), as self-organising bodies (Rauws, 2016), or as tactical urbanism (Lydon & Garcia, 2015).

Many scholars as well as citizens and institutions, express a need for arenas to transition towards sustainable cities and new forms of collaboration across sectors, interests and contexts (Mantysalo, Balducci, and Kangasoja, 2011). The coalitions described in this paper are, in a way, a form of cross-boundary collaboration. The strength of these coalitions is characterised by an inherent collaborative nature that bring different types of knowledge and expertise together. However, it has not yet been demonstrated whether and how they contribute to changes in the overall system. These coalitions do not yet seem to affect the current prevailing planning, design and cultural practices.

Innovation within cities and its impact on systemic change for sustainability depends on a combination of factors that do or do not exist within a specific context. These factors are shaped by the structured frameworks (such as existing policies or rules) and by the social and cultural environment (such as entrepreneurial culture, existing city maker initiatives or activism) (Puerari, 2016). These conditions characterise the urban landscapes in which innovation might happen. In this perspective, a further exploration of the characteristics of such an urban landscape is needed.

This paper aims to go beyond a general description of the value or characterisation of societal groups as a whole. Instead, the focus is on the specific qualities and interactions happening within those environments that might lead to knowledge production and learning aimed at a broader systemic change. Specifically, the characteristics of different types of city makers are studied within the city of Rotterdam, the Netherlands (for more details on the selection of the case study city, see the context paragraph). It is not often that these new types of city makers are categorised or captured in particular. The overall aim is to enable a more detailed understanding of the transformative capacity of these city makers, which is necessary for flourishing and sustainable communities. Practically, this is expected to help in recognising particular niche innovations in cities as well as to understand whom to involve in the future activities of participatory city making. More generally, the understanding that follows from this categorisation must enable the promotion of settings and institutional environments that can deliberately create space for 'short-term innovation and long-term sustainability visions linked to desired societal transitions' (Loorbach, 2010, p. 163).

In short, this paper studies new coalitions, initiatives, niches or city makers by treating them not as one group with similar characteristics but by recognising their diversity. The goal is to understand the activities and roles within the larger landscape of urban socio-technical change. Because of the sought-after understanding, perspectives from both sustainability transitions and design are presented in the theoretical background. The combination of these two perspectives is expected to aid in recognising the places and spaces for innovation and participation in urban contexts. In the following section, the framework of analysis for city maker niches is developed by elaborating on five different theoretical lenses from the two domains of study: sustainability transitions and design. Next, the method section discusses the data collection and the context of the case study city of Rotterdam. The results section then presents the actual categorisation of the different city makers, analysed with the five different lenses. Finally, the discussion and conclusion sections reflect upon how city makers can move from a landscape of isolated niches towards a participatory network for systemic change.

Understanding city makers from a sustainability transitions perspective

In the domain of sustainability transitions, different conceptual models have been developed to understand the dynamics of socio-technical and systemic change. Examples include the multi-level perspective (Geels, 2002), the x-curve (Loorbach, 2014; Loorbach et al., 2017) and the s-curve (Schumpeter, 1934). These models depict a change or transition from one state to another. Often, the subject of change in transitions is a *regime*, described as 'the semi-coherent set of rules carried by different social groups' (Geels, 2002, p. 1260). Niches are the counterpart of regimes. Niches can be considered 'protected spaces' for experimenting with alternative socio-technical configurations, liberated from the selection pressures of the regime (Smith and Raven, 2012). Niches represent a critical source of new ideas and practical solutions for system innovations (Wolfram, 2016a). The actors within niches often act as front-runners of innovation both within their own organisations or social groups as well as for other organisations and groups (Puerari et al., 2017). In the case of this study, the new coalitions of city makers can be considered niches, calling for and acting towards change in the urban regime. They represent innovative ways of managing and dealing with new issues as well as current problems.

One critique of the understanding of transitions is that there is a presumed bottom-up, niche-driven bias (Geels & Schot, 2007). However, niches in our study are not understood as only coming from actors outside the main existing power-structures (i.e. proactive citizens); they may also form within other groups (i.e. among civil servants, public bodies, and other existing power-structures) and be innovations within existing regimes. Even more so, coalitions between bottom-up groups and regimes might trigger the development of niches between them.

Strategic niche management has been suggested as a crucial form of policy intervention to enable the creation of robust and influential niches (Kemp et al., 1998; Schot and Geels, 2008). Based on this suggestion, most analyses of niche dynamics have focused on market-oriented technological innovations that feature industry and state actors. However, cities have recently become recognised as critical hotspots for transitions towards sustainability, incubating and catalysing socio-economic and environmental change (Wolfram, 2016b). A growing amount of literature addresses sustainability innovations driven and implemented by civil actors (Mokter, 2016; Wolfram & Frantzeskaki, 2016; Lydon & Garcia, 2015; Mayer, 2013; Seyfang & Haxeltine, 2012; Seyfang & Smith 2007). To make innovation happen, certain conditions are needed, such as the presence of physical and mental space for learning and experimentation (Avelino et al., 2017), the diversity and richness of experiments (Rotmans & Loorbach, 2009) as well as the presence of norms and agreements that allow for experimentation (Moroni 2015). From this perspective, it is clear how urban niche dynamics are strongly embedded and linked to the urban contexts in which they reside.

More specifically, to shape the development path of niches, three basic conditions have been identified: (1) expectations of the innovation need to be widely shared among members, (2) networking is needed, also beyond members of the niches, and (3) learning should be experiential and occur in the wider social context of communities (Wolfram, 2016a). These three conditions confirm the need for a better understanding of the particularities of different types and offer the first lens for analysis. All three conditions contain a strong indication towards more participation within and between city makers. Participation should occur within groups of city makers to align expectations, but also between as well as beyond city maker boundaries to allow networking and learning. When the city makers are understood in their particular forms, the expectations of each particular type can also be more easily shared beyond their members. The identification of the particular types could also help in recognising network possibilities and opportunities between the different types. Finally, the identification of different city makers could support learning between the different city makers as well as beyond.

Understanding city makers from a design perspective

In general, the field of design is concerned with creating value through the act of designing and making something new. Design can be considered a way of gathering resources to create value (Nonaka & Konno, 1976; Ramaswamy, 2009). Therefore, design can help in understanding city makers' activities towards sustainability transitions. Second, for the studied city makers, design can also be a source for new methods, activities and participatory practices.

An important scholar at the cross-roads of design and sustainability transitions, Ezio Manzini, makes the value of using the broader perspective of design apparent and with that, the value of a design perspective for city makers. In this study, city makers are understood as niche actors in urban contexts. Manzini, while also criticising the current state of design and its lack of debate, proposes a new way to interpret design and designing. In contrast to what he refers to as the currently limited culture of *solution-ism* and *participation-ism* (Manzini, 2016, p. 52), he proposes to distinguish between three different types of design: *diffuse design, expert design and co-design*. Expert design is performed by 'professional designers who should, by definition, be endowed with specific design skills and culture' (Manzini, 2016, p. 53). These skills are needed for the type of activities that designers are formally trained to do; hence also referred to as formal design or traditional design. Skills or activities associated with expert design are, for

example, dealing with uncertainty, thinking about systems, a human-centred focus, transdisciplinary skills, participatory inquiry, visual communication, iteration, experientialism or prototyping. For different sets and combinations of these (expert) design skills or activities, see e.g. Cross (2004), Dalsgaard (2014), Lawson (1980) or Dorst (2011).

However, it is Manzini's understanding of co-design and diffused design that makes it clear how the field of design is useful in understanding the activities of niche actors in the city; particularly towards their activities of participatory city making. Manzini describes co-design as 'the overall design process resulting from the interaction of a variety of disciplines and stakeholders—final users and design experts included' (Manzini, 2016, p. 53). He further states that 'every design process is co-design, and therefore it must provide space for the point of views and active participation of many different actors' (Manzini, 2016, p. 57). This statement makes clear that it can be valuable to look at the field of design and its methods as a potential source for developing participatory methods for other fields, such as city making. Furthermore, Manzini describes *diffuse design* as 'the natural human ability to adopt a design approach, which results from the combination of critical sense, creativity, and practical sense' (Manzini, 2016, p. 53). This description of Manzini is in line with the most inclusive definition of designers by Herbert Simon (1997), who states that 'everyone designs who devises courses of action aimed at changing existing situations into preferred ones' (p. 112). In relation to city making and urban planning, the understanding of diffuse design is quite interesting. The understanding of diffuse design shows that the actions the city makers take to change the course of action for sustainability transitions in the urban context can also be considered design activities, or diffused design activities. City makers naturally perform these activities in their process of problem solving. However, it is these types of diffused design activities that are not as well understood as that of expert design or co-design. There is a substantial body of literature on expert design versus novice design, but here novice design is more design expertise in training. Diffuse design should rather be understood as non-design experts (nor in training) naturally engaging in design and co-design activities.

Four more lenses for the analysis of city makers

Traditionally, design is considered to be concerned with products. However, the understanding of the word 'product' has widened significantly over time. Attention is shifting to more systemic solutions that are developed in a participatory way (e.g. Brown & Wyatt, 2012; Manzini, 2016; Buchanan, 1992; Margolin & Margolin, 2002). The product of a design process is no longer necessarily tangible, and the processes are nowadays more concerned with transitions towards sustainable societies. In 1992, Buchanan described four orders of design: signs and communications, material things, (inter)actions and environments and thoughts and systems. Buchanan argues that these orders are places for discovery, rather than categories. These places for discovery make up the second lens our analysis.

Nowadays, many design scholars agree on the benefits of applying the design process to a wider range of problems. This understanding of the value of design for wider purposes makes that 'Design Thinking is now seen as an exciting new paradigm for dealing with problems in sectors as IT, Business, Education and Medicine' (Dorst, 2011, p. 521), to which we add the sectors of urban development or 'city making'. This shift in attention or expansion of focus is crucial when considering design practices as a possible foundation for transitions towards sustainable societies.

However, a side note is needed here. In some ways, design has also developed into something of a gospel that can concern anything, leading to criticism of the current expansion of the field. Some frame it as 'dilution of the field towards meaningless' (Badke-Shaub, Roozenburg, & Cardoso, 2010). In a critical article, these authors distinguish between 'traditional design thinking' and the 'new movement of design thinking'. The latter is considered more of a management strategy and is mostly criticised for suffering from an ambitious and too general concept. However, the conclusion of these authors is also that both

approaches have reasons for existence and could gain from each other in different ways. Tonkinwise (2011) also criticises the changes in design, arguing that over time one of the core qualities of design and designers has been repressed: style and the role of aesthetic judgement. He argues that current changes, it is these traditional qualities that design and designers are in danger of losing. Therefore, in this study, we take both the 'traditional' and the 'new' design movements into consideration for city making.

The relation between the 'traditional' and 'new' movements of designing is often still shown in categorisations of different levels of design. For example, this relation is clear in the useful categorisation of design in societal change processes that range from the *product-technology system, product service system,* and *socio-technical system* to the *societal system* (Joore & Brezet, 2014). This categorisation provides the third lens for our analysis.

Specifically, regarding the crossovers between the domains of design and sustainability transitions, there are a few active, scholars. The scholars that do seek this combination focus on activities of expert design as well as co-design, but less so on diffused design, to use the terms of Manzini. Gaziulusoy and Ryan (2017), scholars on these cross-roads, describe the different design roles in sustainability transition projects. The roles they describe are very similar to the skills and activities attributed to formal or expert design, as noted above. More interestingly, Gaziulusoy and Ryan also describe three dimensions of the design challenge in sustainability transitions: the *creative*, *technical* and *political* dimensions. These dimensions make up the fourth lens for our framework of analysis.

Last, the fifth lens is constituted of three types of activities required for transitions and system innovations: *strategic*, *tactical* and *operational* activities (Loorbach, 2010). *Strategic activities* are concerned with the formation of long-term goals and visions that will lead to changes in the culture and structure of a socio-technical system; *tactical activities* are directed at implementing a transition agenda towards the desired goal and relate to interactions between actors that can build and align the new vision into the regime level; *operational activities* are related to the experiments and learning-by-doing at the niche level, often with an emphasis on radical and disruptive innovations. This last definition might suggest that niches only perform operational activities. However, this is not the case. Niche actors can perform all three types of activities. For example, many niches in city making are using flexible and short-term projects to advance long-term goals, i.e. related to street safety, public space, and other issues. These actions have been called *tactical urbanism* (Lydon & Garcia, 2015) and refer to a city, organisational or citizen-led approach to neighbourhood building, using short-term, low-cost interventions to catalyse long-term change. Small actions are used in this case to catalyse the attention of existing regimes, within the different stakeholder groups, or on a problem or a specific intervention. In this case, niches are enacting activities at different levels, such as operational and tactical. Sometimes they can also contribute at the strategic level while developing long-term goals and visions to solve or develop specific issues.

To conclude, the five lenses provide a framework of analysis for city makers: (1) the three basic conditions for niche development, (2) the four orders of design or places of discovery, (3) the four levels of design in societal change, (4) the three dimensions of the design challenge and (5) the three transition activities (see Table 1). The combination of these lenses from the domains of design and sustainability transitions will enable a detailed understanding of both the different types of city makers and their activities as well as their collective constitution towards systemic changes regarding sustainability transitions in cities. Also, the different lenses will aid in identifying possible networked actions across the different city makers, stimulating more participatory approaches to city making.

Table 1. Five lenses for understanding city maker initiatives.

	Theoretical lens	Factors	*Authors*
1	**Niche development**	Expectations shared, networking beyond niches and experiential wide social learning	*Wolfram (2016a)*
2	**Places of discovery, orders of design**	Signs & communications, material things, (inter)actions & environments, thoughts & systems.	*Buchanan (1992)*
3	**Design levels in societal change**	Product-technology system, product service system, socio-technical system, societal system	*Joore and Brezet (2014)*
4	**Dimensions of the design challenge**	Creative, technical and political	*Gaziulusoy and Ryan (2017)*
5	**Transition activities**	Operational, tactical and strategic	*Loorbach (2010)*

Method

Inclusion criteria for city maker initiatives

For this study, the inclusion criteria for city maker initiatives are purposely kept broad to allow for a rich pool of data and an inclusive understanding of the activities in the context. Many different terms for the studied city makers are available, such as bottom-up initiatives, grass roots, voluntary citizen initiatives, civil society, social enterprises, non-profit organisations (NPO) or non-governmental organisations. The boundaries between these different terms are often blurred and used interchangeably (Corry 2010). In this article, the rather vague term 'city maker initiative' is generally used. For this study, it is the preferred term because it indicates a certain newness and promotes the inclusion of a broad range of niches, independent of their organisational origin. The term covers all groups with very clear and social driven values that are both partly or completely initiated by state or private actors. Evidently, within our study of city maker initiatives, organisations that are neither state nor private form the largest part. However, this study also includes initiatives that others may not include or consider 'fringe' organisations. There is a second inclusion criterion: a focus on contributing to sustainability transitions. The sustainability transitions criteria included contributions to environmental and social sustainability of cities, people and systems that connect them. Again, this was considered in the broader sense and used more as an inclusion than exclusion criterion.

Context

This study of city maker initiatives has been performed in the Netherlands, where the third sector is characterised by highly active initiatives that are visible in various policy fields and domains (Pape & Brandse, 2016). The urban scale represents the system boundaries and is often the scale that the initiatives operate within, ranging from streets to neighbourhoods, parts of the city or the whole city and sometimes beyond. Rotterdam, the second largest city in the Netherlands, is the specific case study city. Rotterdam is currently receiving attention for its transformative energy and as a breeding ground for new city maker initiatives. Several conditions enhance the rise of city maker initiatives, with a density of groups and coalitions active on different topics. These favourable conditions have led to a great diversity and richness of experimentation of practices and a fertile ground for proactive social entrepreneurship, fostered by a diffuse culture of entrepreneurship typical of the context. Over recent years, policies were also developed in response to this emerging culture as well as in anticipation of the growth of this culture and its associated practices, aiming to stimulate the rise of new city maker initiatives. Some policies that facilitate this experimental culture are, for example, the subsidy lab *Citylab010* where one percent of the municipalities' yearly budget is allocated to city makers and their initiatives; the development of the *Omgevingsvisie* where a more holistic approach for projects in the built environment is developed; the *Right-to-challenge* policy, where citizens can challenge the municipality on managing urban services; and the

experimental co-creation process *Mooi Mooier Middelland*, where a neighbourhood initiative managed to get the municipality budget for their neighborhoods to be opened up to the inhabitants, a lage amount of seven million over four years could be spent. These examples show that old conditions are being unfrozen, making the city of Rotterdam an interesting case of fertile and rich ground to understand the niche dynamics and pathways of city maker initiatives.

Data collection

Between October 2016 and March 2017, the researchers gathered information of 152 city makers, documented in an Excel file. The data collection was done in a systematic and organic way, using various methods. The methods included (i) internet searches that led to databases or previous mappings of initiatives done by other projects or organisations; (ii) attending city maker initiatives' events, openings or initiative networking events; (iii) knowledge and networks of initiatives based on the researchers' previous experience; and (iv) through interviews that were conducted with key stakeholders for a deeper understanding of the different actors in Rotterdam. The interviews were conducted for a related in-depth study (De Koning et al., 2018), but during these interviews, other initiatives (as partners, competitors or examples) often came up.

The goal of the data collection was to gather basic information about the city makers. First, this basic information consisted of the general characteristics (such as the name, the website, when it was founded and the involved partners); second, information was collected on the theme or sustainability goal to which they contributed; and third, descriptive information was added to help identify the type of initiative (a community group, an event, a network and so forth). In the latter category, it was difficult to make a clear distinction between some initiatives. The initiatives, as cited above, are extraordinarily diverse. This diversity made the need for a detailed characterisation, as proposed in this article, even more clear.

Results

Overall, the data on the 152 initiatives in the city of Rotterdam enabled the identification of ten different types of city makers. These ten types of initiatives or ten 'types of city makers' can be found in Table 2 as well as in Figure 1. The icons of Figure 1 are an attempt at visually showing the different city makers. The types that have a geographical base are shown with a solid bottom or a building. The small rectangles in the types represent initiatives that deliberately work on change and innovation. This information, regarding the goals or themes, is based on how the initiative, in person or through their different communication channels, expressed it. The presented categorisation is non-traditional and includes actors beyond the default urban developers concerned with sustainability transitions. The categorisation also shows directly that the field of citizen's initiatives is extremely diverse.

Table 2 Categorisation of ten types of participatory city makers.

Nr.	Type of city makers
1	The community building
2	The community garden/playground
3	The community platform/group
4	The supporting platform/institute (often on a specific theme or topic)
5	The network initiative, connection makers (often in a specific geographical area)
6	The building with room for events, experiments, artist hosting, and other uses
7	The maker space/lab building
8	The collective entrepreneurs/event building
9	The bright idea/innovation
10	The alternative system (monetary, energy, water, food, and other needs)

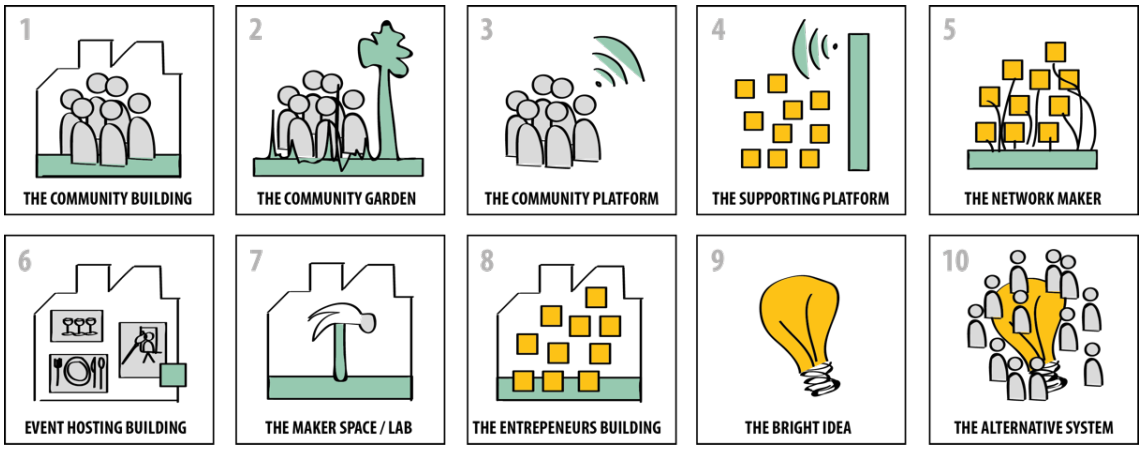

Figure 1. Categorisation of ten types of participatory city makers.

The community types (1, 2, 3)

The community types include *the community building*, *the community garden* and *the community platform*. These types are closely related to a more traditional understanding of citizen initiatives. Often, their focus is on bringing people together, producing (inter)actions and environments. That they bring people together is important as it contributes significantly to one of the conditions for niche development: networking the ideas citizens have. Often these types are in close connection with local civil servants or local politicians, which also makes them interesting places of hybrid meeting grounds by contributing to networking activities beyond their niche. These types might not directly be apparent actors in sustainability transitions, nor is it often their focus. They do not focus on a specific product or system innovation but are concerned with the smaller societal system in their surroundings. However, they are important as places for participation and potential co-design in cities because they offer physical spaces where people meet. In particular, the community building and community garden are seen as some of the few places where tactical and operational activities clearly meet. In addition, the community garden also provides space for contributions towards sustainability transitions in the form of green spaces, improving air quality or experimenting with food production and gardening. The community platform does not offer this physical space; it is more a virtual connector. However, when the network of these platforms is large, their possible influence on the tactical and political level of cities is substantial through sharing and producing thoughts among a wider audience.

The special buildings (1, 6, 7, 8)

Within the ten types of city makers, four types can be identified as specific spaces or places for niche innovations: *the community building*, *the event hosting building*, *the maker space or lab* and *the entrepreneur hosting building*. These buildings are important as they all provide physical spaces for different stakeholders to meet. Again, the value of these meeting spaces is creating (inter)actions and environments for people to connect and possibly co-design. The interaction in these places is often focused on either product-technology innovation or social cohesion and providing network places for niche actors active on these topics in cities. The function of the community building was discussed before and has a greater focus on social cohesion.

Similarly, the event hosting building is a place for like-minded people to meet. Often the initiative aspect of these buildings is not their main function, but they engage groups through certain related activities; such as museums hosting network events, shops providing gatherings for a community on a certain ideology, or galleries organising lectures.

On the other hand, the entrepreneur hosting building and the maker space or lab, focus more on facilitating product-technology innovation. These innovations can, for example, come from the 'bright ideas', a type that will be discussed later. The entrepreneur hosting building offers spaces to work and work together; it is a space for others to perform their operational activities. A maker space is similar in a sense; they attract different kinds of people and stimulate them to perform operational activities. These two types clearly bring together specific actors that engage in the creative and technical dimensions of the design challenge. Although individuals or groups within these building often focus on the product-technology or product-system level, together they sometimes form a community of collective actions around a topic or ideal. This community may help in connecting individual operational activities to more tactical and strategic ones, which would make their space and actions even more interesting and networked towards sustainability transitions in the city. If these buildings indeed host people with a common ideology, stipulating visions towards different futures, they might also have more leverage for the creative and technical dimensions and possibly affect the political dimension of the urban design challenge. In this way, the collective strength of the product-technology systems could trigger a broader change in the societal system.

The network maker and the alternative system (5, 10)

The network maker and *the alternative system* stand out for their focus on participation and inclusion, and the latter as well for a focus on innovation, systemic change and sustainability. Because of the involvement of a large network, the activities of these two types are largely in the operational domain, combined with strategic activities. Often, network makers and the alternative system deal with the creative and political as well the technical dimension of the design challenge when setting up and running their alternative system or network. However, the qualities of both types share in the combination of being able to engage different people as well as providing a strategic vision for the future. The two types are a connector between the four levels of design, providing a strategic framework for the operational and tactical activities of the people with whom they engage. For example, the alternative system brings people together around, a new recycling system, a new food producing system or a collective energy producing system. The alternative system engages people mostly as individual participants to broaden the system and make it grow. The network maker has a different approach, as it often connects to different groups of people (that can also be characterised as city maker initiatives) to strengthen the positions as a collective towards the common goal, not towards the networker maker's own goal. Instead, the network maker is the one that recognises transformative power in others (often on the product-technology level) and tries to support others by strengthening the network towards changes on a societal systems level. In contrast, the alternative system tries to make others part of their own transformative (often product-technology or product-system focused) action for change.

Supporting platform and bright idea (4, 9)

The last two types are *the bright idea* and *the supporting platform*. The supporting platform contains and sends information to the other types of city makers. They do not actively engage people but contain specific information useful for the transition activities of the others, such as knowledge and data on certain topics, tools for different activities or information about particular subsidies in their thematic field. This way, they often provide a platform for sharing, contributing to the wide social learning development path of niches. The actual activities can be rather operational, such as sending information, providing signs and communications. However, with these activities, they might empower others to take more strategic and tactical action.

Last, the bright ideas often focus on creating material things, such as innovation on a product-technology system or product service system level, by tackling the creative and technical dimension of the design challenge. In more traditional socio-technical transition

theory, when niche innovations are mentioned, this type of initiative is often the one mentioned. The number of bright ideas is higher than for other types, much more than, for example, network makers. The bright ideas are extremely important; however, it is also important that bright ideas do not act in a vacuum but are connected to the other types of city makers. They need many of the other nine city maker initiatives to step onto the development path of niches towards a more systemic sustainability transition in cities. For this development, the categorisation helps in identifying and recognising the possible crossovers between different types, beyond the type of bright idea, to make a system flourish.

Discussion

Niches or city maker initiatives were studied in detail, categorised and described according to five lenses. The ten types of city makers show that the landscape of niches is rather diverse. In this discussion, we argue from the different types to a landscape of participatory city makers, and how the five lenses and their factors could enable city makers to bring value to systemic change.

The goal of the categorisation is dual: first, to show the variety and second, to understand the gaps that need to be addressed to reach systemic change. It is believed that a discussion about the specific and particular is useful in understanding real-world phenomena; by understanding the different particulars, their contribution to the complexity of the larger system can be explored. If all the different city maker initiatives or niche actors were aggregated under one general term (such as the third sector), they would be addressed according to the same criteria. In that case, the specific qualities of each type could be lost. In sustainability transitions, the need for diversity in experimentation is often stressed (Loorbach 2010, p. 176); therefore, understanding and capturing this diversity is important to nurture diversity.

The different theoretical lenses contributed to showing the particular variation in qualities and activities of the types of city maker initiatives. They showed that each type of initiative was involved in all three transition activities, contributed to the three dimensions of the design challenge, worked on different design levels or places of discovery and contributed to several actions towards niche development. These variations make it apparent that all types in the broad landscape are needed, complementing each other in working towards systemic change in the urban context. Despite the considerable variation, it was found that many of the city maker initiatives focus largely on operational activities and innovations of the product-technology or product-system level. However, it is important to understand that this finding came out of how the initiatives described or presented themselves and related to the activities that they purposely act out, not the ones they might unintentionally provoke. Indeed, some initiatives might not aspire to contribute to greater systemic impact and can also not be expected to do so, since they are often voluntary actions and have few formal positions. However, However, for example, an initiative could perform operational activities to start a community garden, but the local government could be triggered by this to invest more in green areas in that neighbourhood. Therefore, even without purposely addressing sustainability goals, initiatives can have an impact on larger sustainability transitions and show transformative qualities.

Specific types (such as the network makers) have a great focus on participation and networking. They help in connecting individual niche actions to a broader group and connecting operational activities to tactical and strategic action. In the case of Rotterdam, a network of community gardens was set up based on a route through the west side of the city. This network helped to increase tactical leverage for gardens as well as putting green spaces on the political agenda. These network types increase leverage but generally, the city maker initiatives seem to lack connectedness to regime actors. Real systemic connections are needed in the existing structured frameworks, planning structures and institutions and consequently, to the existing cultural practices (Puerari et al., 2018). Too often the niches of city maker initiatives are only loosely supported in an ad hoc manner by policy, instead of being strategically supported as part of a broader agenda of transformative change. Initiatives are often locally oriented, do not

have intrinsic wider transformative ambitions and do not reach a critical mass. More collaboration, not only between the city maker initiatives in the landscape but also between the landscape and the regime actors, should enable development towards actual systemic change for sustainability transitions. Collaboration should foster networking and mutual learning to create more holistic, participatory and systemic approaches to creating solutions. This call for participation also comes from the interdependency and complexity of the regime and the different niche city makers. From a transition perspective, we argue that sustainability transitions could emerge and be accelerated by stimulating interactions: on the one hand, between an increasingly entrepreneurial and networking government, and on the other hand, between the landscape of emerging and developing initiatives.

For this study, the combination of the field of design and sustainability transitions proved useful to understand the types of actions present in the urban context. The potential of crossovers between the two fields in the urban context should be explored in future research. Also, the collaborative approaches for more interaction are yet to be developed and further researched. It needs to be understood what constitutions of city makers could form desirable constellations or systems, which people to include and in which ways that could best be done depending on the specific contexts and conditions. To do this, the specific roles and activities of people involved in the initiatives must be understood, both their personal motivations as well as for their cities at large. To further the understanding of design in these contexts more studies are needed to bring understanding of the activities and competences of diffuse design. Second, how these activities are similar to or different from expert and co-design activities (besides their untrained origin) in order to further the understanding of design in these contexts. Research should be done to understand the skills of a diffuse designer that is necessary to take part in urban sustainability transition processes.

Furthermore, when collaboration and participation in urban contexts are discussed, the issue of inclusion is often mentioned. The inclusion of a variety of citizens and the different approaches to do so needs ample attention in the future. In this perspective, new methods should be developed to include a broad range of people from the entire society. Systems thinking and design can provide a great foundation for developing these approaches; based on the existing knowledge and methods of co-design, diffuse and expert design. The combination of different lenses from systems thinking and design, as presented in this paper, could contribute to the development of these new systemic and participatory approaches.

The categorisation presented here, regarding the landscape of participatory city makers, can be seen as a starting point for more participatory approaches to trigger systemic change and innovation towards sustainability. The categorisation should enable others to recognise particular activities of diffuse design in urban contexts and to identify possible stakeholders and partners that can act, collaborate and further contribute to sustainability transition processes in urban contexts.

Conclusions

To conclude, the different types of city makers generally bring value to cities. However, so far, the majority of these solutions struggle to capitalise on that value. They act in the operational domain, looking for space of action, searching for funding or struggling with rules or legalisation of their organisational forms. The potential strength of their contribution lies in stimulating more citizen engagement and a greater diversity of solutions for sustainability transitions. Connecting the city maker initiatives more and promoting interactions in between as well as with state and private actors could help in mounting their potential. However, the value of the individual types of city makers as part of the collective search for sustainable cities must not be overlooked and still needs to be understood in all its potential. This study suggests that more participatory approaches to city making that stimulate crossovers and accelerate the transition towards sustainable futures could unlock this potential. These future participatory approaches to city making need to be developed and enriched with a better understanding of

the necessary skills. This understanding would allow for city maker initiatives to strengthen their efforts towards systemic changes and innovations. These skills must not only include those of expert-designer but also of diffuse design, to spread and include a broader range of city makers in transition processes. To develop these new ways of 'participatory city making', it is important to understand with whom and for whom these approaches need to be developed. Therefore, this landscape of city makers can be seen as a trigger as well as a starting point for innovation and systemic change in the urban context.

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